

## IMPACT OF SLEEP QUALITY ON OOCYTES IN WOMEN WITH INFERTILITY UNDERGOING IN VITRO FERTILIZATION TREATMENT

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**Background:** Circadian rhythm regularity is necessary for hormonal regulation. Suboptimal sleep, a key input of circadian rhythm, has been hypothesized to have an adverse effect on fertility. However, there have been limited studies investigating the relationship between sleep and fertility, with the majority employing subjective rather than objective sleep assessments.

**Objective:** The aim of our pilot study is to assess sleep among individuals undergoing in vitro fertilization (IVF) by actigraphy to quantify the role of sleep on IVF outcomes.

**Materials and Methods:** Wrist-worn accelerometers (fitbit®) were used to track sleep prior to and during an IVF cycle. Patient sleep (3-7 days) prior to egg retrieval was averaged, and the coefficient of variation (CV) was computed for sleep quantities as a measure of sleep regularity. Nights of sleep under 4 hours were excluded, and patients with less than 3 nights of sleep more than 4 hours were excluded. The primary outcome was blastulation rate, and the second outcome was egg maturation rate. Categorical covariates were summarized by reporting counts (%), and continuous covariates by means and standard deviations. Fisher exact tests compared categorical covariates across sleep groups, while Wilcoxon rank-sum tests were used for continuous variables.

**Result(s):** Of the 29 participants included in the analysis, patients were similar in education, insurance and household income. Comparing participants with less than 7 hours of average sleep per night to 7 or more hours, participants sleeping less had a significantly higher body weight and BMI ( $p=0.007$  and  $p=0.012$  respectively), and slightly higher Pittsburgh Sleep Quality Index Score (7.2 vs. 5.9). No significant differences in oocyte quality measures were observed between sleep groups (<7hr/night vs. <sup>≥</sup>7hr/night: egg maturation rate 70% vs. 75%  $p=0.626$ ; fertilization rate 85% vs. 87%,  $p=0.753$ ; blastulation rate 61% vs. 54%,  $p=0.565$ ). There was also no significant association observed between blastulation rates and perceived sleep based on PQSI scores (correlation =0.12).

**Conclusion(s):** Our study found no significant association between sleep metrics and blastocyst rate. Further studies are needed to determine if optimizing sleep can improve egg quality, providing an interesting, modifiable lifestyle factor that could improve fertility outcomes.

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### References:

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